AMENDMENTS

Please amend the above-identified application as follows:

IN THE CLAIMS:

Please cancel claims 1 – 32 without prejudice and add new claims 33 - 50, so that the claim set reads as follows:

1 - 32 (cancelled)

33. (New) A method for determining the number of repeat units in a repeat region of a target nucleic acid, said method comprising the steps of:

(a) annealing a primer-complementary portion of a target nucleic acid to a primer thereby forming a target-primer hybrid;

(b) performing a first primer extension reaction using a first primer extension reagent, wherein the first primer extension reagent allows said first primer extension reaction to proceed only to the extent that said primer is extended by an amount less than a full repeat unit;

(c) separating the target-primer hybrid and unreacted first primer extension reagent;

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(d) performing a second primer extension reaction using a second primer extension reagent, wherein the second primer extension reagent allows said second primer extension reaction to proceed only to the extent that the portion of said full repeat unit not synthesized by the first primer extension reagent is synthesized and wherein at least one of the first or second primer extension reagents includes an extendible nucleotide having a label attached thereto;

(e) separating the target-primer hybrid from unreacted second primer extension reagent;

(f) measuring a signal produced by the label;

(g) treating the label so as to render the label undetectable;

(h) repeating a cycle of steps (a) through (g) until the signal is substantially less than a signal detected in a previous cycle; and

(i) determining the number of repeat units in said repeat region of said target nucleic acid.

34. (New) The method of claim 33, wherein step (d) further includes reacting the target-primer hybrid with a primer termination reagent, wherein the termination reagent includes one or more nucleotide terminators that prevent the further extension of a primer extension product when incorporated into said primer extension product.

35. (New) The method of claim 33, wherein the target-primer hybrid is attached to a solid support.

36. (New) The method of claim 33, wherein the primer is attached to a solid support.

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37. (New) The method of claim 33, wherein the target nucleic acid is attached to a solid support.

38. (New) The method of claim 33, wherein the label is selected from the group consisting of fluorescent and chemiluminescent molecules.

39. (New) The method of claim 33, wherein the label is attached to the extendible nucleotide through a cleavable linker.

40. (New) The method of claim 33, wherein the target nucleic acid is amplified prior to analysis.

41. (New) The method of claim 40, wherein amplification is achieved using a PCR.

42. (New) The method of claim 33, wherein the step of treating the label so as to render the label undetectable includes cleaving the label from the labeled extendible nucleotide.

43. (New) The method of claim 33, wherein the step of treating the label so as to render the label undetectable includes destroying a signal producing property of the label.

44. (New) A method for determining the number of repeat units in a repeat region of a target nucleic acid, said method comprising the steps of:

(a) annealing a primer-complementary portion of a target nucleic acid to a primer thereby forming a target-primer hybrid;

(b) performing a first primer extension reaction using a first primer extension reagent, wherein the first primer extension reagent allows said first primer extension reaction to proceed only to the extent that said primer is extended by an amount less than a full repeat unit;

(c) separating the target-primer hybrid and unreacted first primer extension reagent;

(d) performing a second primer extension reaction using a second primer extension reagent, wherein the second primer extension reagent allows said second primer extension reaction to proceed only to the extent that the portion of said full repeat unit not synthesized by the first primer extension reagent is synthesized and a primer termination reagent including a nucleotide terminator having a label attached reagent;

(e) separating the target-primer hybrid from unreacted second primer extension reagent;

(f) measuring a signal produced by the label;

(g) repeating a cycle of steps (a) through (f) until a signal is detected indicating incorporation of the nucleotide terminator; and

(h) determining the number of repeat units in said repeat region of said target nucleic acid.

45. (New) The method of claim 44, wherein the target-primer hybrid is attached to a solid support.

46. (New) The method of claim 44, wherein the primer is attached to a solid support.

47. (New) The method of claim 44, wherein the target nucleic acid is attached to a solid support.

48. (New) The method of claim 44, wherein the label is selected from the group consisting of fluorescent and chemiluminescent molecules.

49. (New) The method of claim 44, wherein the target nucleic acid is amplified prior to analysis.

50. (New) The method of claim 49, wherein amplification is achieved using a PCR.